I SERVE NO MASTER!

Mountain West DevOps 2014
Aaron Gibson - Adaptive Computing

WHO IS THIS GUY?

- 15 Years Systems Admin Experience (Operations)

- Auto-mater

- Finder of silos and other un-repeatable work…

- Passionate about DevOps culture (People)

- If it can't be repeated, it doesn't count!

- Puller of strings, both puppet strings and guitar strings

- Motorcycler

- Husband and Father

WHAT'S ADAPTIVE ABOUT?

"Adaptive Computing manages the world's largest computing installations with its Moab® self-optimizing cloud management and HPC workload management solutions."

AND THAT MEANS…

- NOAA - National Oceanic and Atmospheric Administration - We help predict the weather!

- Digital Globe - High Resolution Satellite and Aerial Images - Large data analysis from aerial images - Malaysia Airlines

- Hospital for Sick Children, Toronto - Trying to cure cancer!

- University of Cambridge - Stephen Hawkings - Origins of the Universe.

- Boeing - Data analysis for fuselage and wings.

A BRIEF HISTORY

- Been with Adaptive for a little over a year.

- Chef was in place, for one small use case. - This was the definition of automation…

- Silos were prevalent

- Disconnected efforts - Dev, QA, Ops, Sales

THE PROBLEM I WAS TRYING TO SOLVE

- Taking developers days of time to stand up our own stack.

- Nothing was reproducible.

- Nothing was automated.

- No two installs were performed the same - Dev's each had "THE" way to install.

- These "installs" didn't match our public docs.

- These core problems were flowing to other departments - Sales, Professional Services, QA.

RUN AWAY!

THE QUEST FOR A SOLUTION

BUT…

```
$ puppetd --waitforcert 30 --server puppetserver.domain.net -v
```

```
$ puppetca --list
```

```
$ puppetca --sign puppetclient-37.domain.net
```

```
$ puppetca --list
```

```
warning: Certificate validation failed; consider using the certname configurati
err: Could not retrieve catalog: Certificates were not trusted: SSL_connect retu
```

OTHER CONCERNS

- Managing our node file - yes, regex it…

- Certificates - yes, we could autosign…

WHAT WE NEEDED

- Order amongst chaos - We needed a consistent way to deploy our stack.

- Modular - Like legos, add some modules etc.

- Eliminate inefficiencies - We needed to cut install times, days of time just won't get it done.

- Continuous feedback loops - Installs follow documentation, as we adjust or improve docs, we then validate and improve installs.

- Bonus Items - Others outside of engineering should be able to utilize. Automate-able with Jenkins

SO WE BUILT THIS…

NO, THIS…

INTRODUCING BUILDER…

- wrapper for puppet

- built in bash

- captures std out from puppet - and errors

- modular - all individual pieces are encapsulated (like modules) into folders

- automate-able - can be called from jenkins

- plug-able - pre and post functions

- one tool to rule....

Search in this project

Files | Commits | Network | Graphs | Issues 0 | Merge Requests | Snippets | Settings

master > builder / +

⬇ Download zip

Name	Last Update	Last Commit > 461ae3e5a65 – Updated notes on munge	history
📁 ancillary	3 days ago	Jeff Dayley	Updated notes on munge
📁 build	18 days ago	Brian Saville	Rename ac-nose to system-tests and install to /opt
📁 install-suite-cloud	3 months ago	Aaron Gibson	adding POC for cloud suite processing
📁 install-suite	2 months ago	Aaron Gibson	addin asterisk in insall repos back
📁 tarball	2 months ago	Jeff Dayley	Fixed mwm tarball error. See DEVOPS-386
📄 .gitignore	2 months ago	Spencer Owen	Updates .gitignore
📄 README.md	2 months ago	Spencer Owen	Improves Readability
📄 Vagrantfile	2 months ago	Spencer Owen	Adds port forward for viewpoint to vagrant file
📄 acApply.sh	25 days ago	Brian Saville	Do not print out promotion level set message is displaying url
📄 builder.sh	18 days ago	Brian Saville	Rename ac-nose to system-tests and install to /opt
📄 mApply.sh	27 days ago	Spencer Owen	Merge branch 'customer'

Name	Last Update	Last Commit >	461ae3e5a65 – Updated notes on munge	history
..				
alps	about a month ago	Spencer Owen	Adds restart to pbs_service	
awop	6 months ago	Aaron Gibson	adjusted arch for layout	
cloud_moab_config	2 months ago	Aaron Gibson	adding in moab_cloud_config ancillary directory. This …	
cloud_service_restart	2 months ago	Aaron Gibson	addin resetMoab into the restart	
customer_config	2 months ago	Spencer Owen	Adds server_priv nodes	
etc_hosts	6 months ago	Jeff dayley	Added ancillary for updating the /etc/hosts file	
generic	2 months ago	Jeff Dayley	Running perltests now requires generic (nativerm) be inst…	
hpc_moab_users	2 months ago	Aaron Gibson	adding in correct user home dir path's	
insightdb	about a month ago	Aaron Gibson	adding updated init-insight.sh as well as init.pp for insi…	
java6	4 months ago	Jeff Dayley	Adding java6 ancillary from 7.2	
java7	4 months ago	Jeff Dayley	Fixed a dependency problem	
ldap	2 months ago	Aaron Gibson	ldap for hpc needs some more work	
ldap_cloud	2 months ago	Aaron Gibson	adding in cloud_ldap	
mam	about a month ago	Corin Kochenower	Retrofit to work more cleanly with feature branching	
moab_license	3 months ago	Jeff Dayley	Updated to use new moab hpc license	

```
function usage()
{

        echo
        echo "USAGE: mApply.sh"

        echo " -h                          Help, display this help  message."
        echo " -a                          List all *.prop files"
        echo " -v                          Verbose mode, this will enable debu
        echo " --rpm                       RPM mode, display to user the avail
        echo " --tar                       Tarball mode, disply to user the av
        echo " --cloud                     Cloud mode, display to user the ava
    echo " --customer                 Customer mode, installs a specific cust
  echo
}
```

```bash
function applySuite()
{
        ## Set FACTER environment variables
        setGeneratedUrl "FACTER_AC_RPM_URL" "${RPM_URL}"
        echo "Using generated URL ${FACTER_AC_RPM_URL}"
        export FACTER_AC_RPM_PKG=${RPM_PKG}

        #facter | grep ac_rpm_url
        #facter | grep ac_rpm_pkg

        ## Process any PRE_APPLY_LIST manifests
        for TARG in ${PRE_APPLY_LIST}
        do
                echo "${TXT_BLU}Pre-applying ${TARG} ...${TXT_RST}" | tee -a ${LOG_NAME}
                puppet apply ${PUPPET_APPLY_OPTS} --detailed-exitcodes ${TARG} | tee -a ${LOG_NAME}
                checkExitCode $? ${TARG}
        done

        echo

        ## Process install.pp manifest to load suite package
        echo "${TXT_BLU}Applying install-suite ...${TXT_RST}" | tee -a ${LOG_NAME}
        puppet apply ${PUPPET_APPLY_OPTS} --detailed-exitcodes install-suite/manifests/init.pp  | tee -a ${LOG_NAME}
        checkExitCode $? 'install-suite/manifests/init.pp'
        echo

        ## Process any POST_APPLY_LIST manifests
        for TARG in ${POST_APPLY_LIST}
        do
                echo "${TXT_BLU}Post-applying ${TARG} ...${TXT_RST}" | tee -a ${LOG_NAME}
                puppet apply ${PUPPET_APPLY_OPTS} --detailed-exitcodes ${TARG} | tee -a ${LOG_NAME}
                checkExitCode $? ${TARG}
        done
}
```

```
[root@more builder]# ./mApply.sh

Available suites:

1) build/rpm/adaptive-workload-optimization-pack-el6.prop
2) build/rpm/moab-hpc-basic-suite-el6.prop
3) build/rpm/moab-hpc-enterprise-suite-el6.prop
4) build/rpm/mwm_developer-el6.prop
5) build/rpm/perl_tests-el6.prop
6) Quit

Select a suite to apply:
```

BUILDER IS PROPERTY FILE DRIVEN

think lego
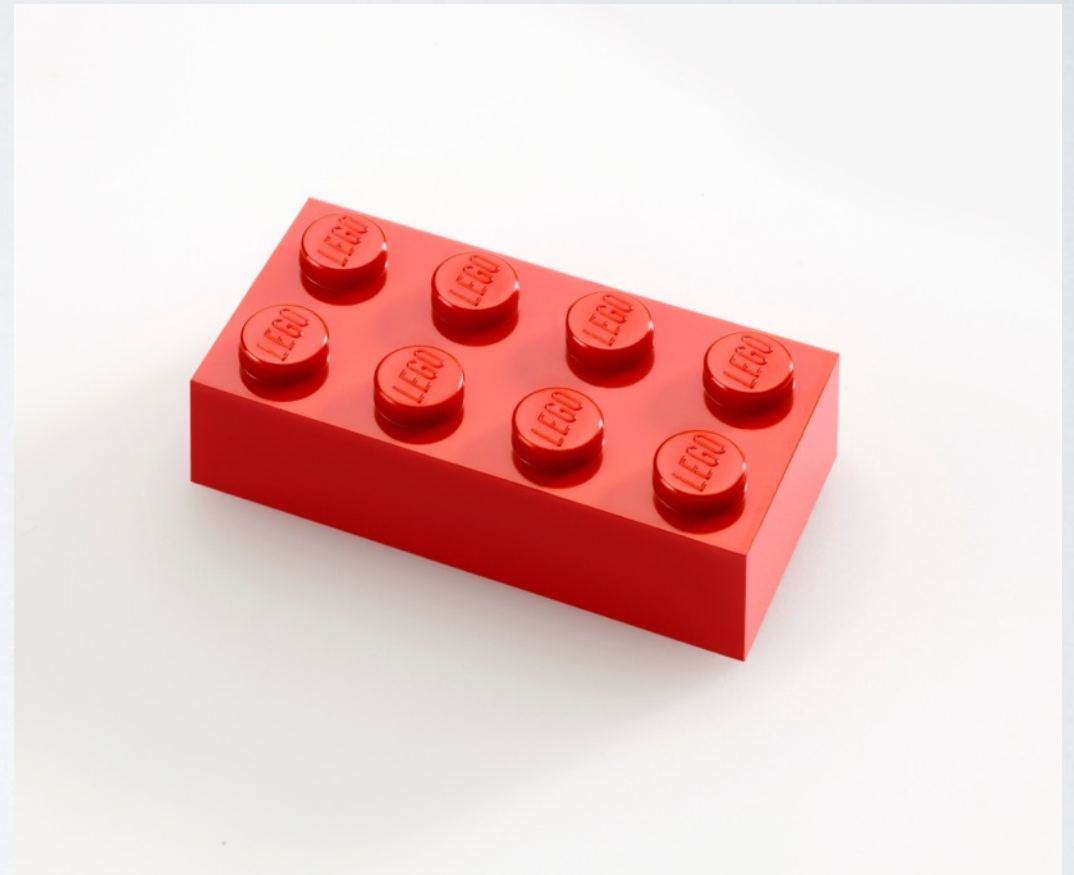
```
[root@more rpm]# ll
total 28
-rw-r--r-- 1 root root 1714 Mar 17 13:35 adaptive-workload-optimization-pack-el6.prop
-rw-r--r-- 1 root root 1701 Mar 17 13:35 moab-hpc-basic-suite-el5.prop
-rw-r--r-- 1 root root 1731 Mar 17 13:35 moab-hpc-basic-suite-el6.prop
-rw-r--r-- 1 root root 1726 Mar 17 13:35 moab-hpc-enterprise-suite-el5.prop
-rw-r--r-- 1 root root 1804 Mar 17 13:35 moab-hpc-enterprise-suite-el6.prop
-rw-r--r-- 1 root root 1545 Mar 17 13:35 mwm_developer-el6.prop
-rw-r--r-- 1 root root 1812 Mar 17 13:35 perl_tests-el6.prop
[root@more rpm]#
```

```
PRE_APPLY_LIST="\
                ancillary/etc_hosts/manifests/init.pp\
                ancillary/java7/manifests/init.pp\
                ancillary/mysql/manifests/init.pp\
                "


POST_APPLY_LIST="\
                ancillary/moab_license/manifests/init.pp\
                ancillary/odbc/manifests/init.pp\
                ancillary/torque/manifests/init.pp\
                ancillary/ldap/manifests/init.pp\
                ancillary/mongo/manifests/init.pp\
                ancillary/system-tests/manifests/init.pp\
                ancillary/hpc_moab_users/manifests/init.pp\
                ancillary/reporting/manifests/init.pp\
                ancillary/mws/manifests/init.pp\
                "

RPM_URL="rpm-distro-tarball/CentOS6/x86_64/moab-hpc-basic-suite-latest.tar.gz"
RPM_PKG="moab-hpc-basic-suite"
```

```
case $::operatingsystem {
  sles: {
    $alternatives = "/usr/sbin/update-alternatives"
  }
  default: {
    $alternatives = "/usr/sbin/alternatives"
  }
}

package {'wget':
  ensure => present
}

exec { "download_java":
    path    => "/usr/bin/wget",
    command => "/usr/bin/wget 'http://javadl.sun.com/webapps/download/AutoDL?BundleId=80804' -O /
    creates => "/tmp/jre-7u40-linux-x64.rpm",
    require => Package["wget"],
}

package { "install_rpm_java":
    name     => "jre-1.7.0_40-fcs",
    source   => "/tmp/jre-7u40-linux-x64.rpm",
    ensure   => present,
    provider => "rpm",
    require  => Exec["download_java"],
}

exec {"run_alternatives":
    command     => "$alternatives --install /usr/bin/java java /usr/java/jre1.7.0_40/bin/java 500
.7.0_40/bin/java",
    require     => Package["install_rpm_java"],
}

file { "/usr/bin/java":
    ensure      => link,
    target      => "/etc/alternatives/java",
    require      => Exec["run_alternatives"],
}
```

```
Post-applying ancillary/mws/manifests/init.pp ...
info: Applying configuration version '1395086877'
notice: /Stage[main]//Exec[ensure_tomcat_running]/returns: executed successfully
notice: /Stage[main]//Exec[ensure_mws_running]/returns: executed successfully
notice: Finished catalog run in 5.92 seconds

Total runtime: 0:00:01:05

Done!
```

OUR WINS

- Dramatic reduction in install times. From approx 12 work hours down to 11 minutes.

- Repeatable - Builder is now our standard for how we install our product. This spans across almost every business unit in the company.

- Suite property files are tied to product documentation. We install exactly like we tell our customers.

- Automate-able - Due to the ability to pass command line arguments, we can call builder from Jenkins and build suites out in OpenStack.

WHAT WE MISSED

- I made an early decision to place everything (source paths for puppet) to be in /tmp - this has proven to be limiting

- reporting - it's basic, a simple curl to post some info to a simple mysql DB, nothing fancy.

- Who - We record who ran builder instances, usually it's root, we would like to know who so we can measure culture change.

THANKS!

AARON GIBSON

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